

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-3 and 5-7 are presently pending in this case. Claims 1-3 and 5 are amended, Claim 4 is canceled without prejudice or disclaimer, and new Claims 6 and 7 are added by the present amendment. As amended Claims 1-3 and 5 and new Claims 6 and 7 are supported by the original claims, no new matter is added.

In the outstanding Official Action, Claims 1-5 were rejected under 35 U.S.C. §112, second paragraph; Claims 4 and 5 were rejected under 35 U.S.C. §101; and Claims 1-5 were rejected under 35 U.S.C. §103(a) as unpatentable over Buckler et al. (U.S. Patent No. 5,030,984, hereinafter “Buckler”) in view of Kanbara (U.S. Patent No. 5,689,737).

The abstract is amended herewith to place it in conformance with U.S. practice. No new matter is added.

With regard to the rejection of Claims 1-5 under 35 U.S.C. §112, second paragraph, Claims 1, 3, and 5 are amended to replace the first instance of “said movement blurring” with “movement blurring.” Further, Claims 1-3 and 5 are amended to replace “substituted as to a model” with “substituted into a model.” Claim 4 is canceled without prejudice or disclaimer. Accordingly, Claims 1-3 and 5 are believed to be in compliance with all requirements under 35 U.S.C. §112, second paragraph.

With regard to rejection of Claims 4 and 5 under 35 U.S.C. §101, Claim 4 is canceled without prejudice or disclaimer and Claim 5 is amended to recite a “computer readable recording medium,” as suggested in the outstanding Office Action. Accordingly, Claim 5 is believed to be in compliance with all requirements under 35 U.S.C. §101.

With regard to the rejection of Claims 1, 3, and 5 as unpatentable over Buckler in view of Kanbara, that rejection is respectfully traversed.

Claim 1 recites in part:

processing region setting means for setting a processing region within image data wherein a light signal of the real world is projected on a plurality of pixels, each having a time integration effect, and a portion of the continuity of the light signal of the real world is lost;

movement vector setting means for setting movement vectors for an object within said image data corresponding to the continuity of the light signal of the real world, wherein a portion of the continuity of said image data is lost;

model generating means for modeling the relation between the pixel value of each of the pixels within said processing region and the pixel value of each of the pixels **without movement blurring occurring**, assuming that the pixel value of each of the pixels within said processing region is a value wherein the pixel value of each of the pixels without movement blurring occurring which correspond to said object is integrated while shifting corresponding to said movement vector;

normal equation generating means for generating a normal equation **using a first equation** wherein the pixel value of each of the pixels within said processing region is substituted into a model generated by said model generating means, **and a second equation** which constrains the relation between each of the pixels without said movement blurring occurring; and

actual world estimating means for estimating a pixel value of each pixel wherein said movement blurring is not occurring, by computing said normal equation which is generated by said normal equation generating means.

Buckler describes an apparatus for minimizing the effects of motion in the recording of an image including functional block 42, which adjusts light level based on motion.¹ The outstanding Office Action cited the processing described at column 6, lines 40 to 44 of Buckler as “model generating means,” the equation at column 6, line 63 of Buckler as “a first equation,” and the equation at column 6, line 29 of Buckler as “a second equation.”² However, it is respectfully noted that Buckler expressly states at column 6, lines 21-25 that the approach used in Buckler:

¹See Buckler, Figure 4, column 5, lines 48-49, and column 6, line 17 to column 7, line 35.

²See the outstanding Office Action at page 5, lines 15-22.

operates under the assumption that ***any intensity changes measured in time are attributed to motion in space.*** This is approximately true for the short time periods that are relevant here. An "optical flow field" may be calculated wherein ***a vector at each image site indicates the displacement of the site between two sequential image frames.*** (Emphasis added.)

Thus, the image intensity function described by Buckler includes motion between sequential image frames. In fact, it is respectfully submitted that Buckler does not teach or suggest any means for generating equations including pixel values ***without movement blurring occurring***, much less generating an equation modeling the relation ***between*** the pixel value of each of the pixels within said processing region ***and*** the pixel value of each of the pixels ***without movement blurring occurring***. Thus, it is respectfully submitted that Buckler does not teach "model generating means" as defined in amended Claim 1. Further, it is respectfully submitted that Buckler does not teach or suggest "normal equation generating means for generating a normal equation ***using a first equation*** wherein the pixel value of each of the pixels within said processing region is substituted into a model ***generated by said model generating means, and a second equation*** which constrains the relation between each of the pixels ***without said movement blurring occurring***," as again Buckler does not teach or suggest generating equations including pixel values ***without movement blurring occurring***. Finally, it is respectfully submitted that Kanbara does not teach or suggest any of these features either. Consequently, Claim 1 (and Claim 2 dependent therefrom) is patentable over Buckler in view of Kanbara.

Amended Claims 3 and 5 recite in part:

modeling the relation ***between*** the pixel value of each of the pixels within said processing region ***and*** the pixel value of each of the pixels ***without movement blurring occurring***, assuming that the pixel value of each of the pixels within said processing region is a value wherein the pixel value of each of the pixels without movement blurring occurring which correspond to said object is integrated while shifting corresponding to said movement vector;

generating a normal equation using ***a first equation*** wherein the pixel value of each of the pixels within said processing region is substituted into ***a model generated by said modeling, and a second equation*** which constrains the relation between each of the pixels ***without said movement blurring occurring.***

The outstanding Office Action cited the same portions of Buckler noted above as describing these two features.³ However, as noted above, Buckler does not teach or suggest generating any equations including pixel values ***without movement blurring occurring.*** Thus, Buckler does not teach or suggest “modeling the relation” or “generating a normal equation” as recited in Claims 3 and 5. Further, it is respectfully submitted that Kanbara does not teach or suggest either of these features either. Consequently, Claims 3 and 5 are patentable over Buckler in view of Kanbara.

New Claims 6 and 7 are supported at least by original Claims 1 and 2. New Claim 6 recites in part:

a model generating unit configured to model the relation ***between*** the pixel value of each of the pixels within said processing region ***and*** the pixel value of each of the pixels ***without movement blurring occurring***, assuming that the pixel value of each of the pixels within said processing region is a value wherein the pixel value of each of the pixels without movement blurring occurring which correspond to said object is integrated while shifting corresponding to said movement vector;

a normal equation generating unit configured to generate ***a normal equation using a first equation*** wherein the pixel value of each of the pixels within said processing region is substituted into ***a model generated by said model generating unit, and a second equation*** which constrains the relation between each of the pixels ***without said movement blurring occurring.***

However, as noted above, Buckler does not teach or suggest any unit configured to generate any equations including pixel values ***without movement blurring occurring.*** Thus, Buckler does not teach or suggest “a model generating unit” or “a normal equation generating

³See the outstanding Office Action at page 5, lines 15-22.

Application No. 10/562,176
Reply to Office Action of October 5, 2007

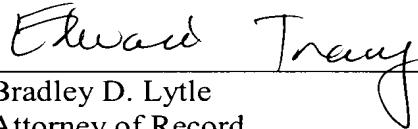
unit" as recited in new Claim 6. Further, it is respectfully submitted that Kanbara does not teach or suggest either of these features either. Consequently, new Claim 6 (and Claim 7 dependent therefrom) is also patentable over Buckler in view of Kanbara.

Accordingly, the pending claims are believed to be in condition for formal allowance.

An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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